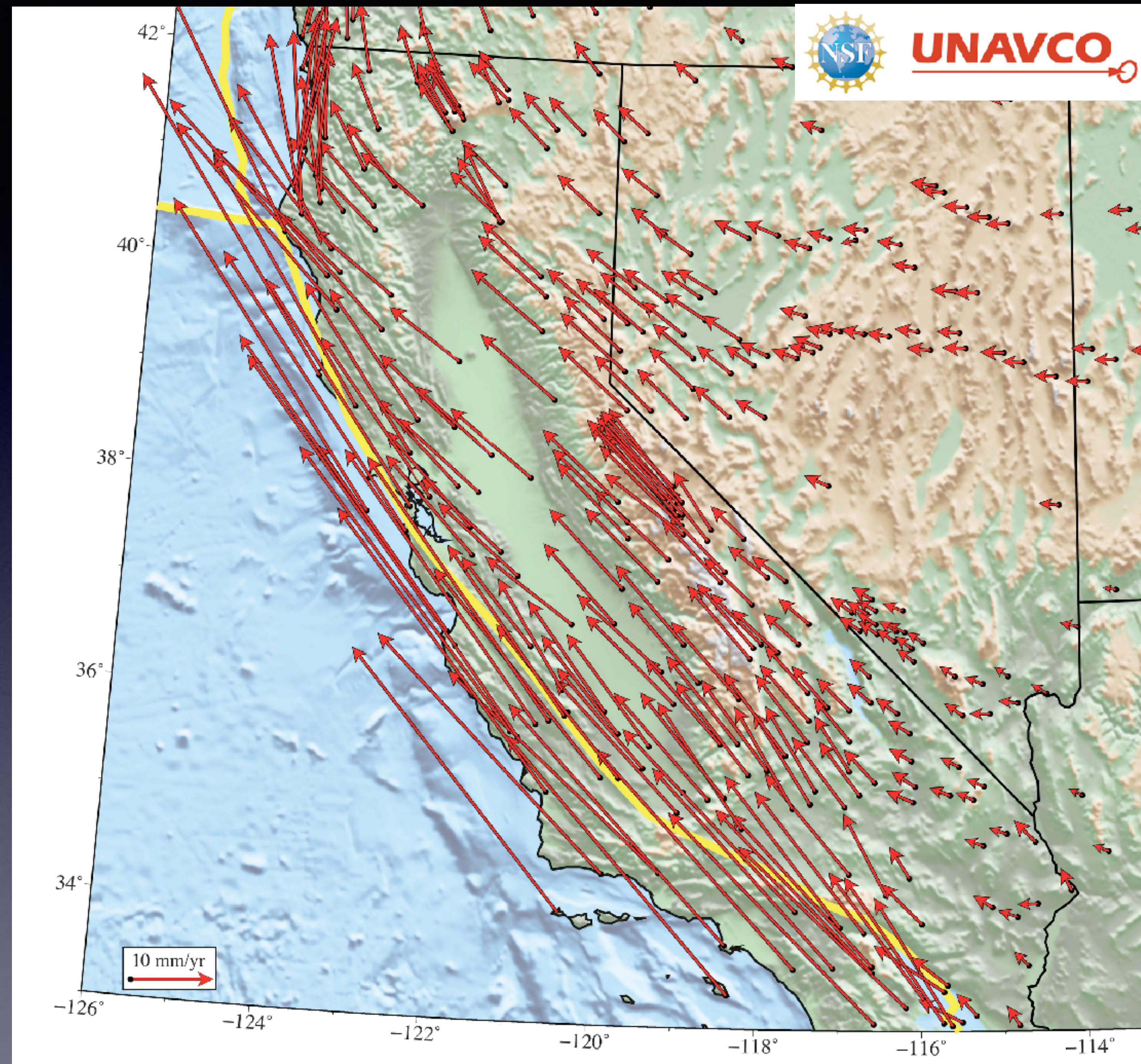


# Surface deformation from the 4th of July Mw 6.4 and 5th of July 2019 Mw 7.1 Ridgecrest Earthquakes in California

Eric Jameson Fielding  
Jet Propulsion Laboratory, California Institute of  
Technology

# Tectonic Motions of California

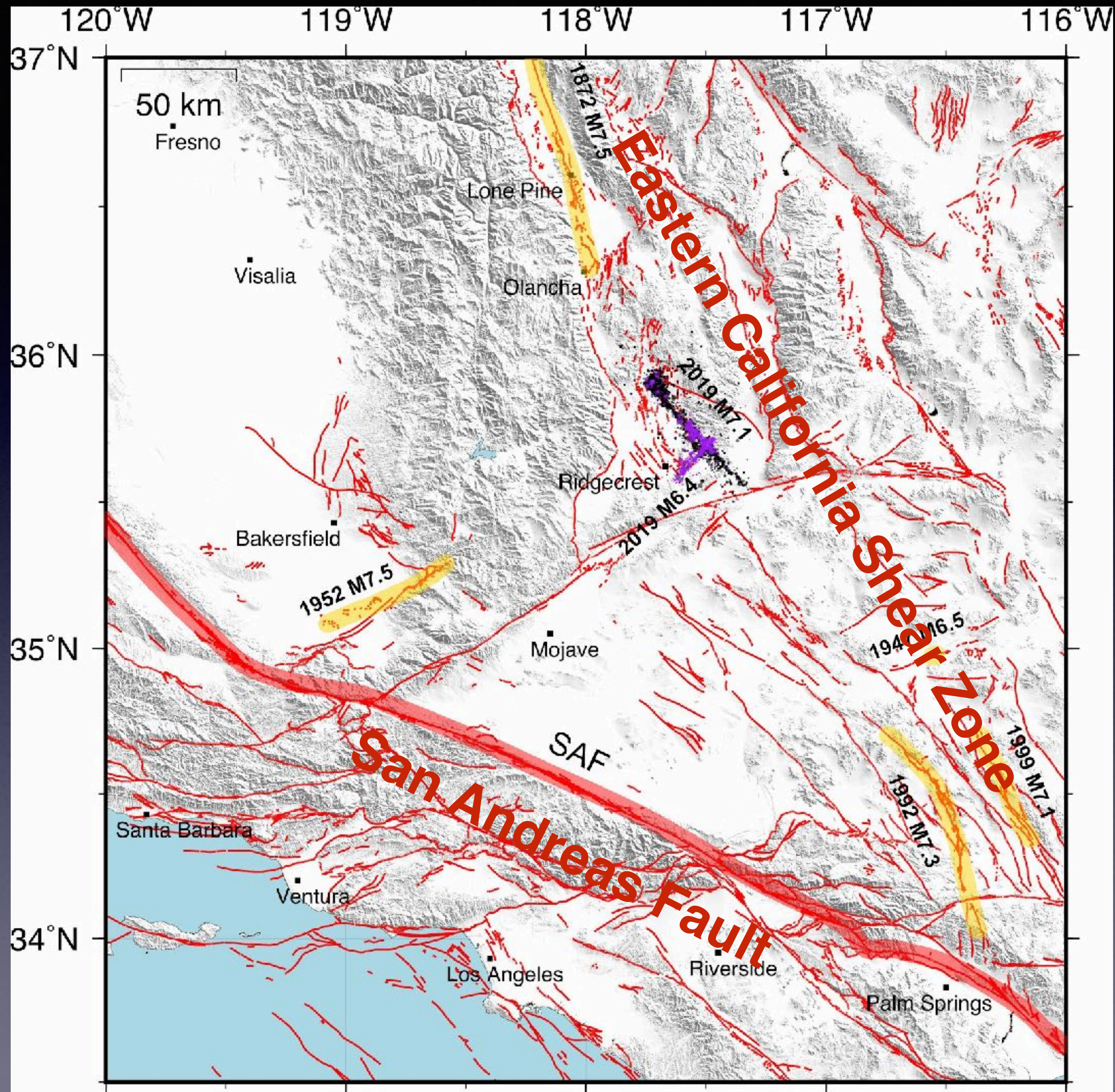
Horizontal motion  
measured by GPS  
Network of the  
Americas  
(formerly Plate  
Boundary  
Observatory)



# Southern California earthquakes

- San Andreas Fault last earthquake 1857
- Eastern California Shear Zone 1872-1992-1999

map by Benjamin Idini, Caltech

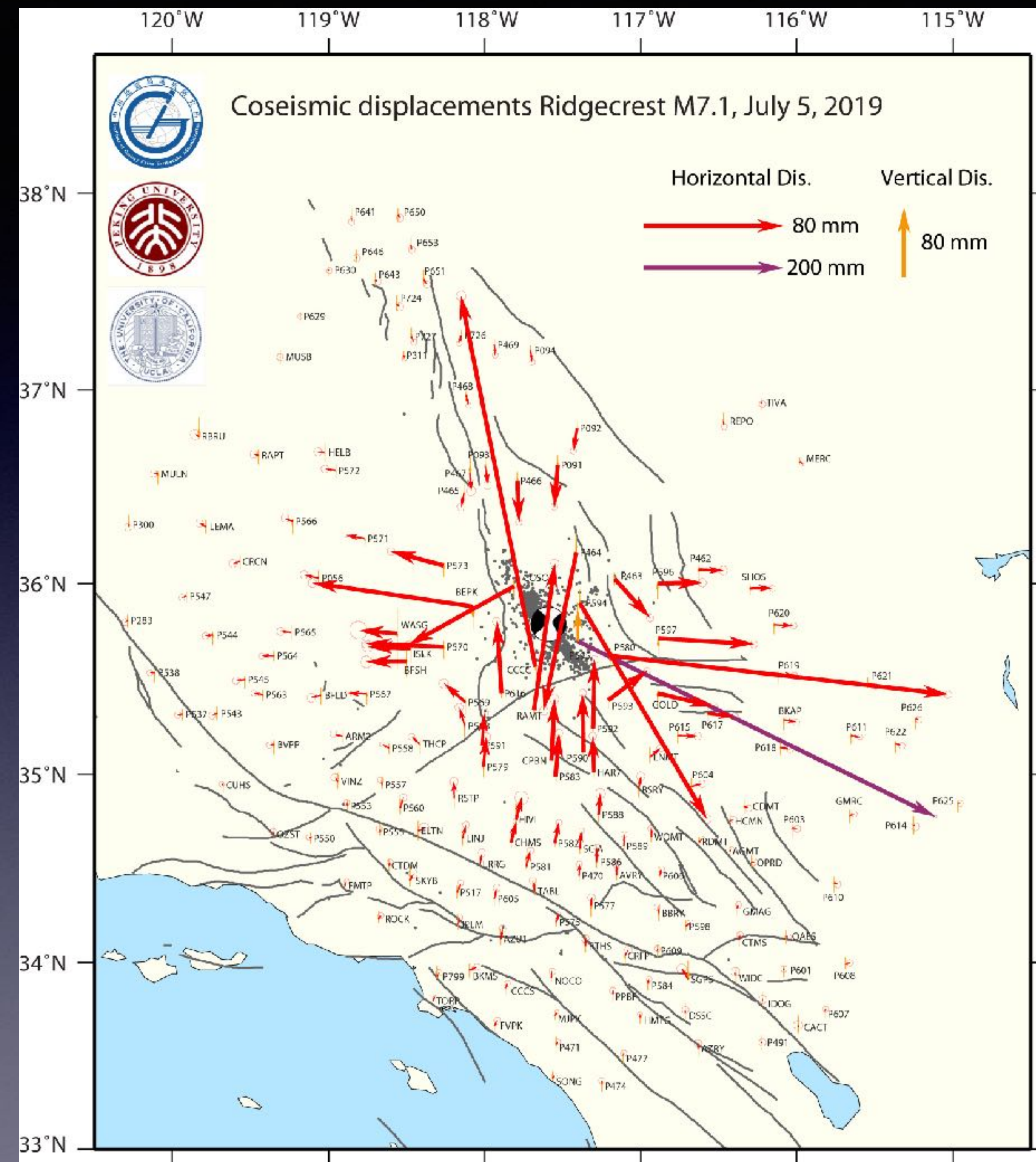




# 2019 Mw 7.1 Ridgecrest Earthquake

- 5th of July 05 20:19:52 PDT
- 6 July 03:20 UTC
- Mww 7.1
- GPS displacements show main rupture on NW-SE fault
- Right-lateral

map Zheng-Kang Shen, UCLA, pers. comm.

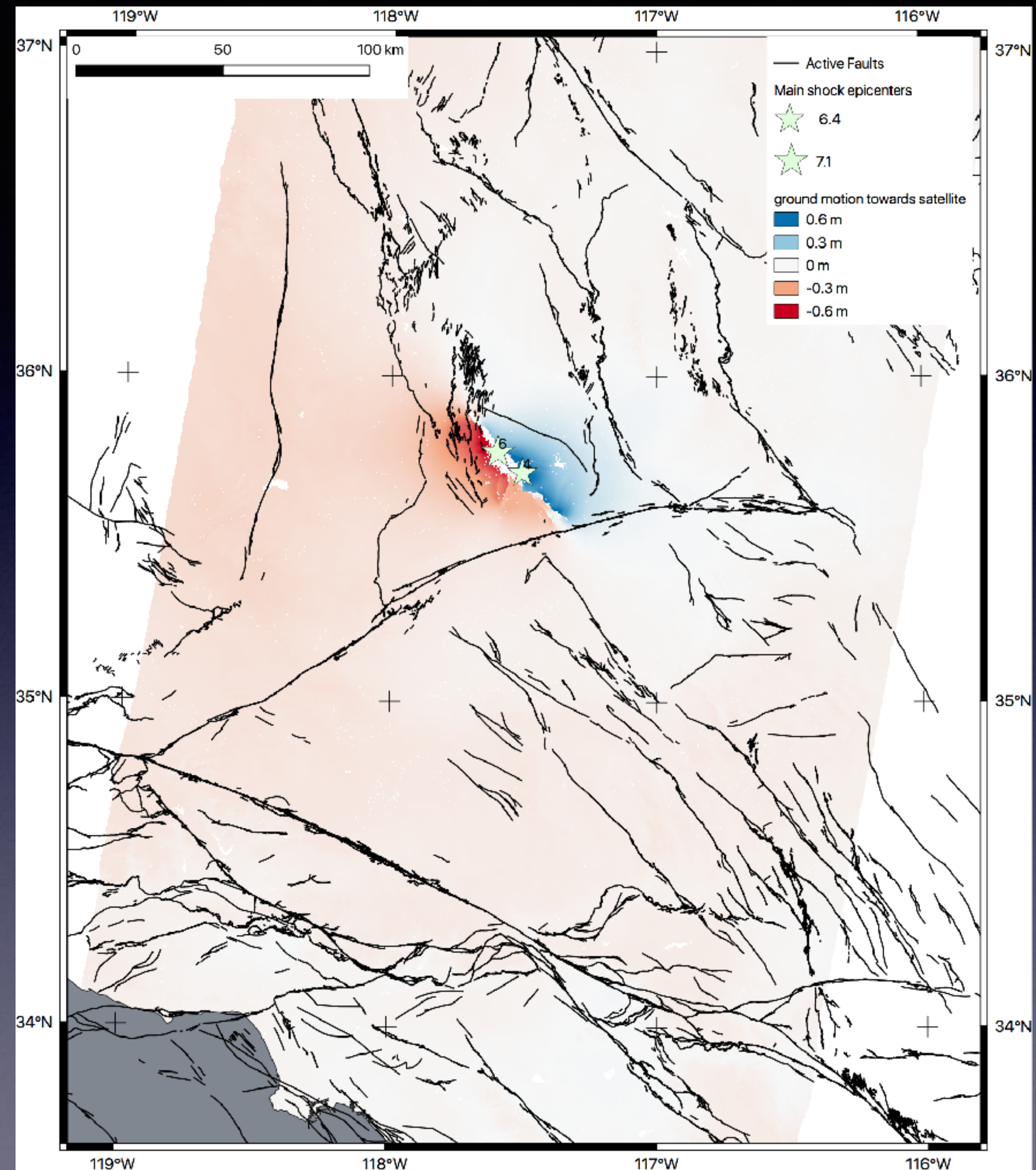


# Radar Interferometry

Copernicus Sentinel-1  
SAR 2019/07/04 and 07/16

Radar line-of-sight

NASA Caltech-JPL ARIA  
processing

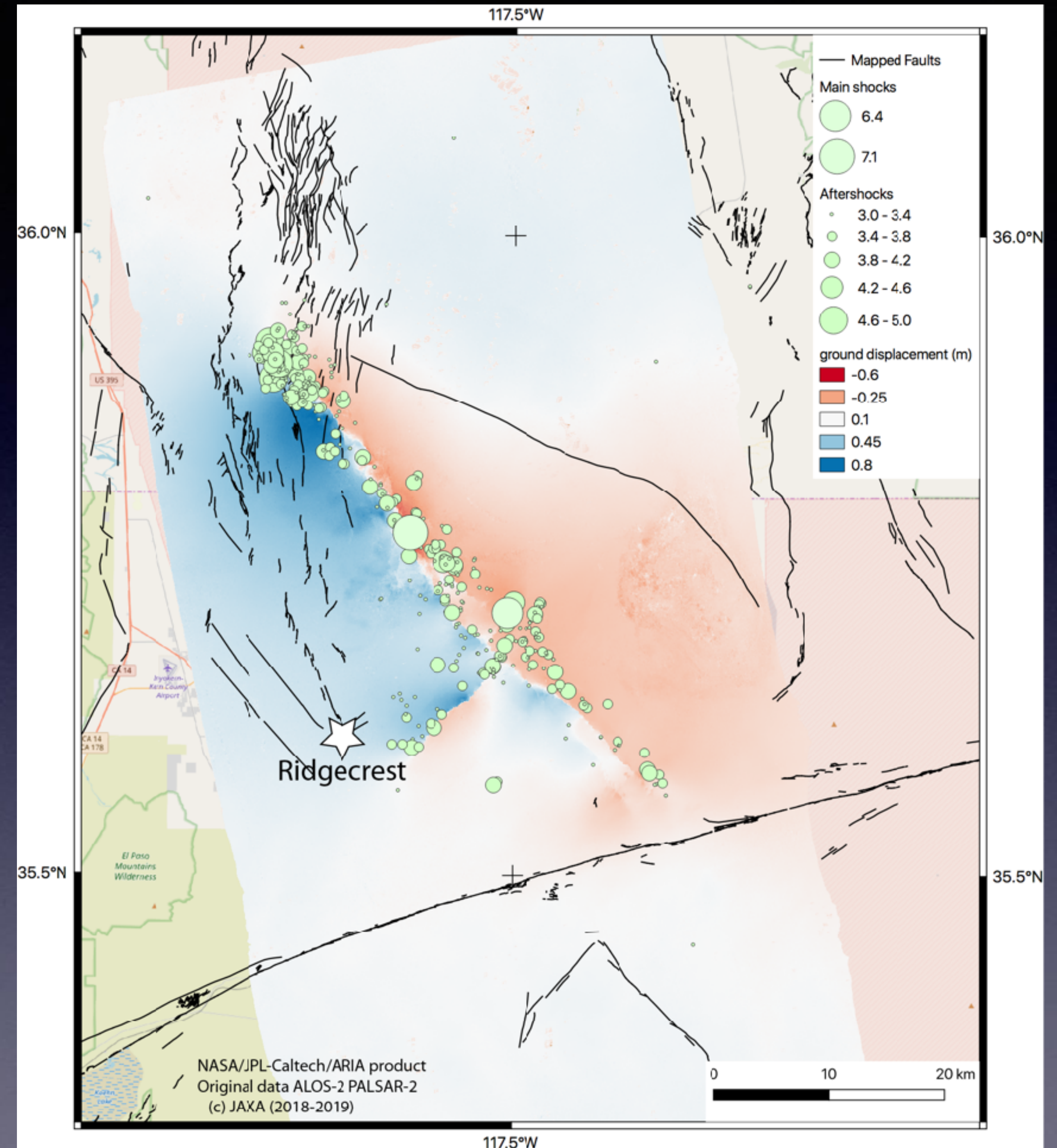


# Radar Interferometry

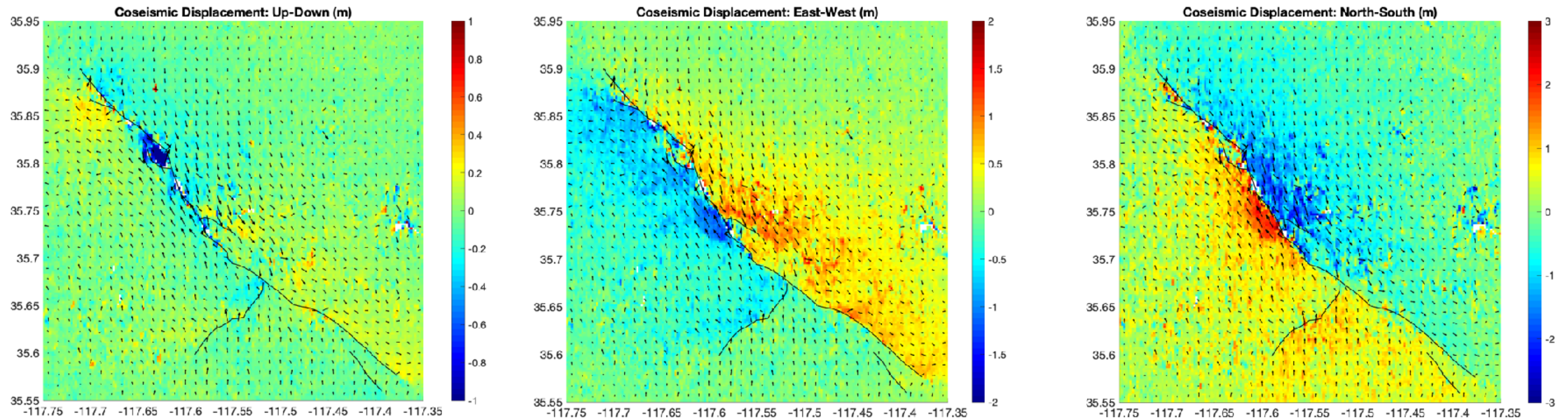
JAXA ALOS-2 SAR  
2018/04/16 and  
2019/07/08

Radar line-of-sight

NASA Caltech-JPL ARIA  
processing



# Radar pixel tracking



Copernicus Sentinel-1 SAR 2019/07/04, 07/10 and 07/16  
pixel offsets from SAR image cross-correlation  
combined two tracks  
Mong-Han Huang, University of Maryland

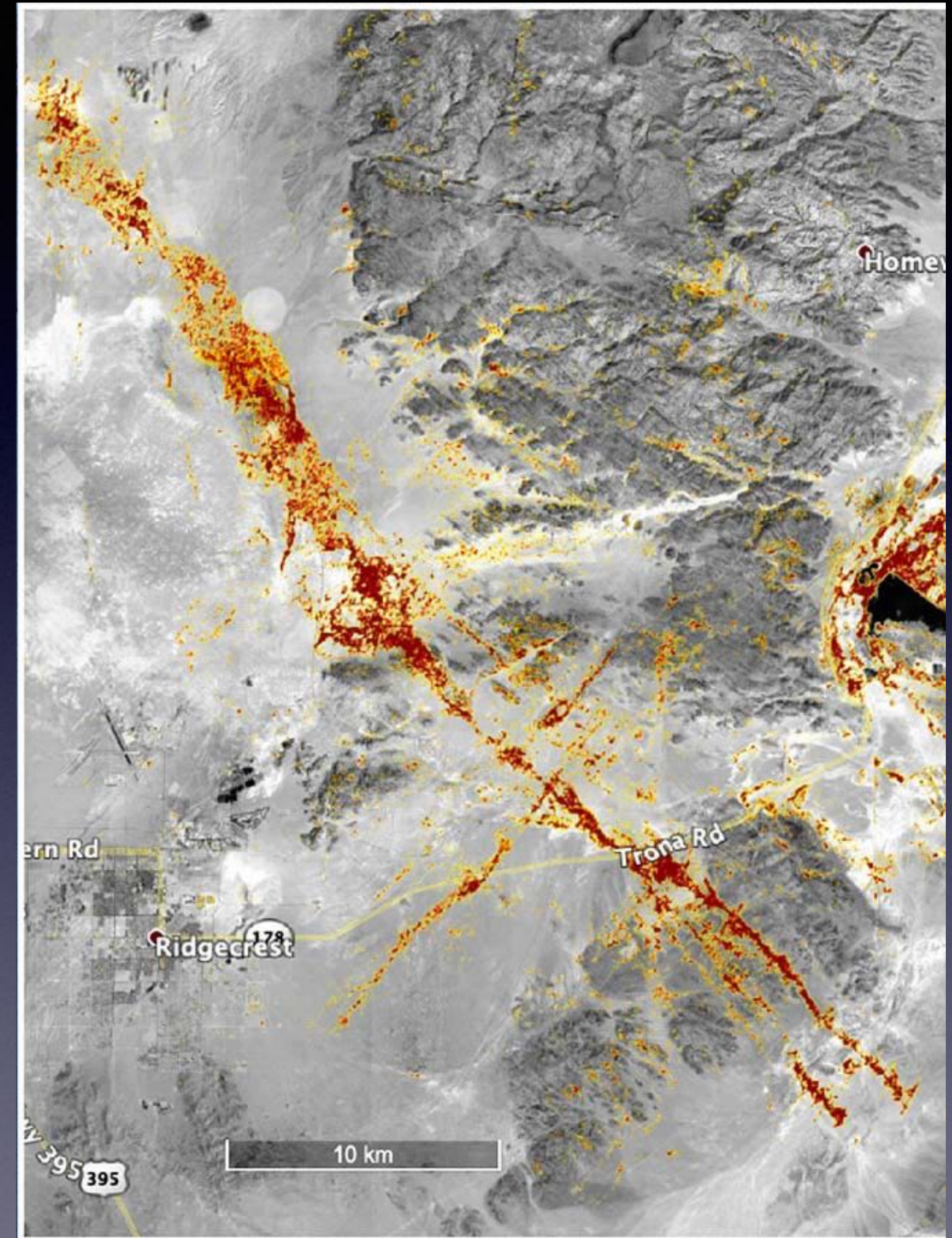
# Damage Proxy Maps

Copernicus Sentinel-1 SAR  
2019/06/28, 07/04, and 07/10

Change of interferometric  
coherence

NASA Caltech-JPL ARIA  
processing

map by Sang-Ho Yun, JPL and Google Earth



Contains modified Copernicus Sentinel data, processed by ESA. Analyzed by the NASA-JPL/Caltech ARIA team.

# Conclusions

- Main rupture of Mw 6.4 earthquake left-lateral on NE-trending fault
- Main rupture of Mw 7.1 earthquake right-lateral on NW-trending fault
- Complex pattern of fault ruptures in the earthquake sequence